

REMARKS

Review and reconsideration on the merits are requested.

Claims 1, 3-5, 7-13, 18, 19, 22, 24, 25 and 26 were pending at the time of rejection.

Claim 25 is canceled herein.

Rejection of Claim 26 Under 35 U.S.C. § 112, First Paragraph

The Examiner requests where claim 26 is supported in the specification. As discusses during the interview, an interview summary later being provided, claim 26 was in error. The claim is amended to correct the same. Withdrawal is requested.

Claim 3 defines a structure which comprises a substrate/thermal sprayed film (undercoat layer) /island projection as shown in Fig. 7. The “undercoat layer” is formed by the thermal spraying of glass.

Claim 26 is amended so as to agree with claim 3, basis occurring at page 11 of the specification.

Rejections – 35 U.S.C. § 112, Second Paragraph

It is believed that the amendment to claim 26 responds to this rejection. Withdrawal is requested.

Provisional Obviousness-Type Double Patenting Rejection

A Terminal Disclaimer is filed. Withdrawal is requested.

The Prior Art

U.S. 5,324,566 Ogawa et al. (Ogawa).

U.S. 6,777,045 B2 Lin et al. (Lin).

JP-A 11-106,225 Inaki et al. (Inaki).

**Traversal of the Art Rejections
In the Order Presented**

Rejection of all claims under 35 U.S.C. § 103(a) as being unpatentable over Ogawa.

The Examiner's reading of Ogawa is set forth in the Action and will not be repeated here except as necessary for an understanding of Applicants' traversal which is now presented.

Ogawa discloses an invention which relates to a water-repelling and oil-repelling film having surface irregularities. For example, according to Fig. 34 of Ogawa, which reflects Example 10 and is relied upon by the Examiner, a structure is disclosed wherein a glass layer (53) having irregularities formed by silica powder (52) is formed on a hydrophilic substrate (51).

In Fig. 35, a structure is disclosed in which on the glass layer (53) a fluorocarbon film (54) is formed.

As is clear from the Figures and the disclosure in Ogawa, it is clear that the "projections" in Ogawa always have fluorocarbon layer provided on the material which constitutes the projections (in the above case, the material being a silica powder). As a consequence, the silica powder is not exposed on the surface thereof.

In contrast, the glass which constitutes the island projections in the present application is in a state where it is not covered by another compound such as the fluorocarbon in Ogawa. As a consequence, the glass surface is exposed. See the Figures in the present application. This aspect of the invention is now emphasized in the independent claims, and Applicants submit that the rejection over Ogawa is properly withdrawn.

If the Examiner thinks that some language would be better than that Applicants have used, the Examiner is requested to contact the undersigned.

**Rejection of All Claims Under 35 U.S.C. § 103(a) as
Unpatentable over Lin in View of Inaki**

The Examiner's reading and application of the claims to the prior art are set forth in the Action and will not be repeated here except as necessary to an understanding of Applicants' traversal which is now presented.

Lin relates to a domed enclosure wall for a plasma processing chamber. The wall in Lin comprising, a ceramic coating which is formed by plasma spraying on a dielectric material having a roughened surface with a roughness average of from about 150 to about 450 microinches.

In Paragraph 8 at page 5 of the Action, first and second lines from the bottom, the Examiner states:

"Lin et al. teaches a surface of a wall of a chamber of a plasma device that is plasma sprayed with micron size particles on a roughened surface...", citing the abstract of Lin.

However, Lin is actually silent about particle size in the abstract, rather, the "150-450 microinches" is a value which relates to surface roughness, not micron sized particles.

In the Examiner's view, Figure 3B of Lin shows that the particles themselves form projections during the initial stage of the Lin process. However, referring to Lin the thermally sprayed film obtained in Lin is a "conformal coating 420" (Lin, column 8, line 56). Figure 3B of Lin simply shows schematically how the thermally sprayed particles fly to and deposit on the substrate during thermal spray film formation.

Referring to Lin at column 9, lines 47-53, Lin teaches that the stand-off distance and angle may be regulated so that the spray coating material forms a "lamella" structure with

“pancakes”. From this additional disclosure in Lin, it is believed quite clear that projections of the present invention **cannot** be formed by the method described in Lin.

Referring to Fig. 3B of Lin, quite clearly Fig. 3B shows schematically how the thermally sprayed particles fly to and deposit on the substrate during thermal spray film formation. Applicants submit that considering the above disclosure in Lin, and especially considering Fig 3B of Lin, it is quite clear that the projections according to the present invention could never be formed by the method of Lin. Applicants have submitted two publications in rebuttal on this point, Oki S., et al. and Fukanuma H. et al., explained in their Amendment 1.111 of March 20, 2006 and the Examiner is requested to refer thereto.

However, the rejection is a combination rejection, and Applicants now turn to Inaki.

Inaki discloses a quartz glass having irregularities on the surface thereof, wherein each convexity or concavity is spherical or elliptical with a diameter not exceeding 10 μm .

The Examiner has urged that the invention claimed in the present application is obvious over the combination of Lin and Inaki. Applicants herein, however, are of the opinion that it would be extremely difficult for one of ordinary skill in the art to combine such prior art, i.e., there is no motivation for one of ordinary skill to combine Lin with Inaki or modify Lin in view of Inaki, and Applicants explain their position by reference to the attached drawings and a translation of paragraphs [0010] and [0011] of Inaki.

The method of forming spherical or elliptical irregularities on the surface of a quartz glass is as follows, considering the disclosure in paragraphs [0010] and [0011] of Inaki.

(1) A film-forming material is coated on the quartz glass surface by coating means such as a spinner, etc., to give a film having a thickness not exceeding 100 μm .

(2) After drying, the coated glass is etched in an HF solution or in a fluorine-containing atmosphere and the like.

By such operations, the film formed on the quartz glass substrate is considered to act as a mask to suppress etching of the quartz glass surface by the HF solution or the fluorine-containing atmosphere and the like.

In the case where the film thickness is below 100 μm , an HF solution or a fluorine-containing atmosphere and the like (hereafter just fluorine-containing atmosphere) will penetrate through the film penetration parts along the molecular shape of the film to reach the quartz glass surface. See attached Fig. 1a. As a consequence, isotropic etching will proceed to the quartz glass surface beginning at the portion where the HF solution or fluorine-containing atmosphere has penetrated, and spherical or elliptical concaves will be formed as shown in Fig. 1b. When etching proceeds still further, the area where the quartz glass is in contact with the film will decrease. Finally, the film will peel off from the quartz glass as shown in Fig. 1c. The convexes and concaves in the surface of the quartz glass obtained in such a manner are, in Applicants view, the convexes and concaves of the surface of the quartz glass obtained in such a manner would a structure as shown in Fig. 1 of the Inaki patent specification where convexes remaining as a result of isotropic etching not proceeding would exist and the same would be closely packed spherical or elliptical concaves with a diameter not exceeding 10 μm .

In distinction, in cases where the film thickness would exceed 100 μm , the HF solution or fluorine-containing atmosphere, which penetrates via the penetration parts along the molecular shape of the film, cannot reach the quartz glass surface due to the high film thickness. Thus, no

etching of the quartz glass surface will place. It is logical to conclude that in this case no irregularities would be formed in the quartz glass surface.

Thus, as above discussed, in the surface of the quartz glass per Inaki, when the film thickness is below 100 μm , convexes remain as non-etched portions while etched portions result in spherical or elliptical concaves, as shown in attached Fig. 1c. In contrast, the surface of the part defined by the claims of the present application is provided with spherical island projections (convexes) on a smooth substrate where no concaves exist in the substrate. As a consequence, the surface of the part of the present invention has a completely different structure from the surface of Inaki.

Accordingly, even if one of ordinary skill in the art were to modify Lin in view of Inaki, one skilled in the art from a combination of a ceramic coating formed by spraying particles as disclosed in Lin with the spherical or elliptical concaves formed by etching with an HF solution, etc., as disclosed in Inaki, would not be led to the claims of the present application.

Withdrawal is requested.

Allowance is requested.

Summary of Substance of Interview

With respect to the 112 rejections, Applicants admitted that there was an error in claim 26 and claim 26 would have to be amended in accordance with the specification at page 11 so as to be compatible with page 3.

With respect to the obviousness-type double patenting rejection, Applicants now file a Terminal Disclaimer since the Examiner indicated that any response filed after final would have to be accompanied by a Terminal Disclaimer, or a successful traverse.

With respect to the rejection over Ogawa, the Examiner said that perhaps there might not be motivation to reach the present claims from Ogawa if the combination of a plasma or CVD chamber were more precisely claimed. Applicants have not elected this option.

With respect to the rejection over Lin and Inaki, the Examiner agreed there was a minor typographical error at the top of page 7 of the Action, as the Examiner points out in **Attachment to Interview Summary** and the Examiner, without indicating agreement, indicated that the Examiner would consider arguments directed to the teachings of the concave and convex structures of Inaki being used to modify what the Examiner characterized as the discontinuous intermediate structure of Lin.

No other issues were discussed and patentability was not resolved during the interview.

AMENDMENT UNDER 37 C.F.R. § 1.116
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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